Gradient Boosting

⟶ Regression

Dataset

Exp	Degree	Salary	$\hat{y}$	$(y-\hat{y})$ R_1	R_2	$\hat{y}$
2	BS	50K	75	-25	-23	72.7
3	MS	70K	75	-5	-3	74.7
5	MS	80K	75	5	3	—
6	PhD	100K	75	25	20	—
		75K				

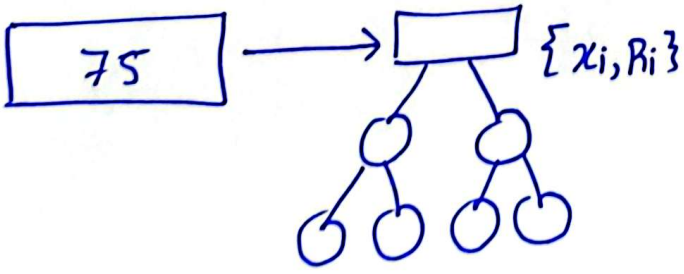
Steps:

① Create a base model

↳ Average of output variable

② Compute residuals and errors

③ Construction a decision tree considering input x_i and output R_i



Predicted output

75 + (-23)

= 75 - 23

= 52

↳ overfitting

④ Repeat step 2 and 3

$F(x) = h_0(x) + \alpha_1(h_1(x) + \alpha_2(h_2(x) + \dots$

α_1 = learning rate

Predicted output

$75 + \alpha(DT_1)$

$= 75 + (0.1)(-23)$

$= 75 - 2.3 = 72.7$